REMARKS

The issues outstanding in the final office action of August 5, 2010, are the claim objections, and rejections under 35 USC §112 and §103. Reconsideration of these issues, in view of the following discussion, is respectfully requested.

Entry of the foregoing amendment is respectfully requested. In as much as it presents no new issues for consideration by the Examiner, as it inserts the features of claim 3, previously considered, into claim 1 in order to narrow issues for consideration in any potential appeal.

Claim Objections:

Claims 6-9 have been objected to as the result of their status identifiers. The status identifiers have been corrected. For completeness, it is noted that the traversal of the restriction requirement is maintained.

Rejections Under 35 USC §112:

Claims 1-4 have been rejected under 35 USC §112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully disagree.

It is argued, at page 2 of the Office Action, that the recitation of the abundance of trivalent cerium, expressed as $[Ce^{+3}]/([Ce^{+3}]+[Ce^{+4}])$, finds no support "to determine the abundance of trivalent cerium" in the specification. This assertion is clearly in error. Paragraph 33 of the present specification states that the "abundance (presence ratio) of the trivalent cerium is preferably from 0.01 to 0.6." Paragraph 62, which, as admitted at page 2 of the specification teaches that the abundance of trivalent cerium produced in one example has a value of 0.15, defines the abundance of cerium as "abundance of the positive trivalent cerium, that is, $[Ce^{+3}]/([Ce^{+3}] + [Ce^{+4}])$, which was obtained from peak separating treatment and area ratio, was 0.15. Herein, $[Ce^{+3}]$ represents the number of the trivalent cerium atoms per unit volume/unit mass in the sample, and $[Ce^{+4}]$ represents the number of the positive quadrivalent cerium atoms in the same unit." Thus, the specification, clearly not only supports the definition of the abundance of trivalent cerium as the amount of Ce^{+3} divided by the total amount of Ce^{+3} and

Ce^{+4}, but further explicitely supports the ratio of 0.01 to 0.6. Thus, there is no basis for the written description rejection, withdrawal thereof is respectfully requested.

The rejection, at page 2, further indicates that "claim 4" requires the expression [Ce]/([In]+[Ce]) = 0.005 to 0.035. In fact, it is believed that claim 3 is intended in this rejection, rather than claim 4. It is noted that this feature from claim 3 has now been recited in claim 1. The Office Action again argues there is no support in the specification or drawings for this range. This is clearly incorrect. At paragraphs 26-28 of the specification, it is indicated that the sputtering target according to the invention comprises indium oxide and cerium oxide in a ratio of Ce/In + Ce of 0.005 to 0.15. As noted in paragraph 66, example 2 at Fig. 1, a composition was produced having a ratio of 0.035. It appears that the thrust of this rejection is that there is no explicit disclosure in the specification of the *range* of 0.005 to 0.035, instead, only a disclosure of the broader range with a maximum value of 0.15 and a single example at 0.035. If, in fact, this is the allegation in the Office Action, it is clear that the above noted portions of the specification are more than adequate to support the narrowed, claimed range. Indeed, the example at 0.035 is not even necessary, under well established law. For example, the Federal Circuit's predecessor court has stated that satisfaction of §112 written description requirements are evaluated from the perspective of one ordinary skilled in the art and that it is quite clear that "ipsis verbis" description is not required. All that is necessary for written description is that a specification convey to one of ordinary skilled in the art that the Applicant has invented the specific subject matter later claimed. *In re Smith*, 481 2d. 910, 178 U.S.P.Q. 620 (CCPA 1973).

In the area of numerical ranges, the case law is quite clear that where a broad numerical range is disclosed, Applicants have invented the entirety on the range and have full written description to claim a narrow portion thereof, *even where* a specific end point is not explicitely disclosed. See *In re Wertheim et al.*, 541 F2d. 257, 191 U.S.P.Q. 90 (CCPA 1976). In *Werthein*, there was original disclosure of a range of 25-60, with additional example data points at 36 and 50. Applicants wished to claim a range of 35 to 60, with the point of 35 being nowhere disclosed in the specification. In holding that the broad range of 25-60 supported at this narrow range of 35-60, the court held that one of ordinary skill in the art viewing the broad range would envision the narrower range later claimed. It is noted that *Wertheim* had an example close to the value

which formed the end terminus of the later claimed range. In fact, in the present application, there is an example value exactly at the terminus. However, it is important to note that this is not necessary under the doctrine of *Wertheim*. Indeed, in *McLaughlin v. Roberts*, 197 USPQ 831 (POBI 1978); Roberts claimed an amount of propellant in a composition of 10 to 25%. Roberts' specification disclosed amounts of 10 to 79%, 40 to 79%, and 40 to 60%. Thus, the 25% value was not explicitedly disclosed and, moreover, outside of the preferred range. However, applying the *Wertheim* rationale, the Patent Office own Board of Interferences held that one of ordinary skill in the art would envision the narrowly claimed range, stating that one of ordinary skill in the art "would consider that the use of the 10-25% range would be a part of [Roberts] invention." 191 USPQ 98.

It is thus amply clear that the narrowed range of 0.005 to 0.035 finds written description in the broad range of 0.005 to 0.15, and that this rejection should also be withdrawn.

Rejection Under 35 USC §103:

Claims 1-4 have been rejected under 35 USC §103 over Fukuyoshi (JP'841) and Hosokawa et al. (WO '137). Reconsideration of this rejection is again respectfully requested. As admitted in the Office Action, both Fukuyoshi and Hosokawa are silent on the abundance of trivalent cerium, that is, the ratio of cerium +3 to +4. Claim 1 recites an abundance ratio of 0.01-0.6. To the extent that Hosokawa arguably "recognized the equivalency" of various cerium oxides, as argued at page 4 of the office action, Hosokawa does not, however, suggest any particular ratio of the trivalent to quadravalent ions. Merely disclosing CeO_2 and CeO_x in a larger list that concludes with "and mixtures" does not suggest to one of ordinary skill the particularly claimed ratio of just these two oxides, in admixture. Moreover, it is not seen that the particular claimed ratio herein is "merely the selection of a functionally equivalent cerium oxides recognized in the art." Indeed, the abundance of trivalent cerium is not recognized as a result effective variable in sputtering, but Applicants herein have determined that if the abundance is less than 0.01 then the dispursability of the cerium atom may not be controlled with ease. Applicants have further determined that, if the abundance is more that 0.6, abnormal dispersion may be caused. See paragraph 33 of the present specification. In addition, in comparative

examples 1-3 of the present specification, no trivalent cerium was present. There was a failure of crystallization in these examples, unacceptable high electrode potential and, in two examples, unacceptably specific resistance. This is shown to be true verses examples with varying levels of trivalent cerium. Thus, the present sputtering targets having an abundance of trivalent cerium as stated are clearly advantageous, and the rationale in the Office Action, that the trivalent or tetravalent forms of cerium are "functionally equivalent," is disproved.

In addition, the references fail to suggest a ratio of cerium to indium of 0.005 to 0.35. Assuming that the calculation performed at page 5 of the Office Action is correct (which is not admitted) the prior art enables calculation of a ratio 0.05, outside of the presently claimed range. While it is argued that the presently claimed range of 0.035 is "close enough that one skilled in the art would have expected them to have the same properties" no basis for this assumption is given, and it is submitted that none exists. At page 6, the Office Action appears to call for evidence that such concentration is "critical." In the absence of motivation to modify the ratio, it is submitted that such evidence is not necessary. However, as demonstrated in the present examples, with increasing ratio the particle diameter increases, eventually to an undesirable point. This can be seen by comparing, for example, examples 1 and 2 with example 3, when a ratio of 0.07 produces a particle diameter nearly double that of the other two examples. Thus, by controlling the ratio, one of ordinary skill in the art in view of the present specification is able to maintain an advantageous particle diameter. This is not taught in the reference, and it is submitted it provides further basis of patentability.

It is accordingly respectfully submitted that all claims are that all claims are in condition for allowance, and passage to issue is respectfully requested. However, should the Examiner have any questions or comments, he is cordially invited to telephone the undersigned at the number below.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

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